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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RTID 0648-XR049

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Construction Activities for the Statter Harbor Improvement Project

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; Issuance of an Incidental Harassment Authorization

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the City of Juneau to incidentally harass, by Level A and Level B harassment only, marine mammals during construction activities associated with the Statter Harbor improvement project in Auke Bay, Alaska.

DATES: This authorization is effective from October 1, 2020 to September 30, 2021.

FOR FURTHER INFORMATION CONTACT: Sara Young, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On April 15, 2019, NMFS received a request from the City of Juneau for an IHA to take marine mammals incidental to construction activities at Statter Harbor in Auke Bay, Alaska. The application was deemed adequate and complete on September 26, 2019. The City of Juneau's request is for take of a small number of eight species of marine mammals, by Level B harassment and Level A harassment. Neither the City of Juneau nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued an IHA to the City of Juneau for related work (84 FR 11066; March 25, 2019), which covers the first phase of activities (dredging, blasting, pile removal) and is effective from October 1, 2019 to September 30, 2020. The City of Juneau has not yet conducted any work under the previous IHA and therefore no monitoring results are available at the time of writing.

This IHA covers one year of a larger project for which the City of Juneau obtained one prior IHA. The larger multi-year project involves several harbor improvement projects including dismantling and demolition of existing docks, construction of a mechanically stabilized earth wall, and installation of concrete floats.

Description of Specified Activity

Overview

The harbor improvements described in the application include installation of timber floats supported by 20 16-inch steel pipe piles, installation of a gangway, replacement of piles supporting a transient float, and removal of temporary fill that will be placed under the first IHA and construction of the permanent mechanically stabilized earth (MSE) wall.

Dates and Duration

The activities are expected to occur between October 1, 2020 and May 1, 2021 but the IHA will be valid for one year to account for any delays in the construction timeline. In winter months, shorter 8-hour to 10-hour workdays in available daylight are anticipated. To be conservative, 12-hour work days were assumed for the purposes of analysis in this notice.

Specific Geographic Region

The activities will occur at Statter Harbor in Auke Bay, Alaska which is in the southeast portion of the state. See Figure 3 in the application for detailed maps of the project area. Statter Harbor is located at the most northeasterly point of Auke Bay.

Detailed Description of Specific Activity

New infrastructure to be installed includes 9,136 square feet (848.8 square meters) of timber floats supported by twenty (20) 16-inch (4.1-decimeter) diameter steel pipe piles, an 10-foot by 100-foot gangway (3-meters by 30.5-meters), removal of the temporary surcharge fill and construction of the permanent MSE wall. In addition to the new infrastructure, three existing piles will be repaired. The previously installed temporary piles will be removed with a crane or vibratory hammer and reinstalled with rock sockets to provide sufficient moorage capacity for the float.

Pile driving/removal will be conducted from a floating barge, utilizing a drill to install rock sockets and a vibratory hammer to install piles. Use of impact hammers is not anticipated, and will only be used for piles that encounter soils too dense to penetrate with the vibratory equipment. Due to the substrate in the harbor, it is anticipated all of the piles will require drilling for rock sockets, referred to in this notice as down the hole

drilling. The drilling will likely occur midway through vibratory installation of a pile and will occur on the same day the pile is being driven. A summary of the number and type of piles planned to be driven is included in Table 1 below.

Table 1 -- Pile Driving and Removal Summary

Activity	# piles	Pile Size/Type	Method	Average Piles/day 1 (Range)	Driving Days	Strike/pile or minutes/pile	Estimated Total Daily Duration
Pile Removal	3	16-inch (4.1-decimeter) Steel Pipe	Vibratory	3	1	30	12 hours / 500 strikes
Pile Installation	23		Vibratory	1.5 (1-3)	8-23	120	
			Impact	1 (0-2)		250	
			Drilling	1.5 (1-3)		240	

A detailed description of the planned construction project is provided in the Federal Register notice for the proposed IHA (84 FR 55920; October 18, 2019). Since that time, no changes have been made to the planned pile driving and removal activities. Therefore, a detailed description is not provided here. Please refer to that Federal Register notice for the description of the specific activity.

Required mitigation, monitoring, and reporting measures are described in detail later in this document (please see *Mitigation and Monitoring and Reporting*).

Comments and Response

A notice of NMFS's proposal to issue an IHA to the City of Juneau was published in the Federal Register on October 18, 2019 (84 FR 55920). That notice described, in detail, the City of Juneau's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission

outlined below.

Comment: The Commission recommended that NMFS ensure that the City keeps a running tally of the total takes, both observed and extrapolated takes for each species, as the activity could continue into periods of low visibility and the entirety of the Level B harassment zone would not be visible to observers.

Response: We agree that the City of Juneau must ensure they do not exceed authorized takes. We have included in the authorization that the City of Juneau must include extrapolation of the estimated takes by Level B harassment based on the number of observed exposures within the Level B harassment zone and the percentage of the Level B harassment zone that was not visible in the draft and final reports.

Comment: The Commission questioned whether the public notice provision, for IHA renewals, including the 15-day comment period, fully satisfy the public notice and comment provision in the MMPA. The Commission also noted the potential burden on reviewers of reviewing key documents and developing comments quickly. Therefore the Commission recommended that NMFS refrain from using the proposed renewal process for the City's authorization. The Commission also recommended that NMFS use the IHA Renewal process sparingly and selectively for activities expected to have the lowest levels of impacts to marine mammals and that require less complex analysis. The Commission's final recommendation to NMFS was to provide the Commission and other reviewers the full 30-day comment period as set forth in section 101(a)(5)(D)(iii) of the MMPA.

Response: We appreciate the Commission's input and direct the reader to our recent response to a similar comment, which can be found at 84 FR 52464 (October 2, 2019; 84 FR 52466).

Comment: The Commission recommended that, prior to issuing an IHA for year 2 of Statter Harbor construction activities, NMFS determine whether it can make its determinations regarding small numbers, negligible impact, and unmitigable adverse impact on subsistence use regarding the total taking of each species or stock on the authorizations of Statter Harbor Year 1 and Year IHAs combined. If NMFS cannot make those determinations, the Commission recommended NMFS refrain from issuing a Phase 1 renewal without issuing a coincident one-year delay for the Phase 2 authorization.

Response: NMFS disagrees with the Commission's assertion that our statutorily required determinations must be made on the cumulative analyses of both IHAs issued to Statter Harbor. The phases of construction are separate entities and intended to occur in sequential order, although operational delays could realign the timing such that the construction does not occur as far apart temporally as originally expected. The IHA requests were submitted separately and have been analyzed separately as they are independent actions and NMFS is not required to consider cumulative effects of other issued IHAs to make our determinations under the MMPA. We do consider overall context-specific criteria such as the likely nature of any response by marine mammals, the context of any responses as well as the likelihood of mitigation.

Changes from Proposed to Final IHA

No significant changes were made from the proposed to final IHA. Several typos were corrected, including addressing errors in Tables 5 and 6 of the Proposed and Final

Notice of IHA. A typo in the harbor seal take estimation has been corrected from an estimate of 121 to 122 harbor seals per day. Similarly, calculation of take by Level A harassment for harbor seals was corrected to 276 from 253, as we incorrectly used 11 and not 12 seals per day for our calculation. This adjustment does not alter our findings or determinations presented in the notice of proposed issuance of an IHA. Group size of Dall's porpoise has been adjusted from two to four individuals, based on Navy data provided by the MMC, resulting in authorization of 24 incidents of Level A harassment 24 Dall's porpoise. Updated take numbers are reflected in Table 7 below. After input from the Marine Mammal Commission and discussion with the applicant, the shutdown zone for harbor seals from impact driving has been adjusted to 25 meters from the 100 meters included in the notice of proposed IHA (Table 8) to ensure that the City of Juneau can complete the work within the timeline described and avoid impracticable shutdowns for frequently occurring resident pinnipeds.

Description of Marine Mammals in the Area of Specified Activities

Eight species of marine mammal have been documented in southeast Alaska waters in the vicinity of Statter Harbor. These species are: harbor seal, harbor porpoise, Dall's porpoise, killer whale, humpback whale, minke whale, California sea lion, and Steller sea lion. Of these species, only three are known to occur in Statter Harbor regularly: harbor seal, Steller sea lion, and humpback whale.

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs;

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>] and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (<https://www.fisheries.noaa.gov/find-species>).

Table 2 lists all species with expected potential for occurrence in Statter Harbor and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2018). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Alaska Region and Pacific Region SARs (Carretta *et al.*, 2019; Muto *et al.*, 2019). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2018 SARs (Carretta *et al.*, 2019; Muto *et al.*, 2019).

Table 2 -- Species with the Potential to Occur in Statter Harbor

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenopteridae (rorquals)						
Humpback whale	<i>Megaptera novaeangliae</i>	Central North Pacific	E, D, Y	10,103 (0.3, 7,891, 2006)	83	26
Minke whale	<i>Balaenoptera acutorostrata</i>	Alaska	-;N	N/A	Und	0
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	<i>Orcinus orca</i>	Alaska Resident	-;N	2,347 (N/A, 2,347, 2012)	24	1
Killer whale	<i>Orcinus orca</i>	Northern Resident	-;N	261 (N/A, 261, 2011)	1.96	0
Killer whale	<i>Orcinus orca</i>	Gulf of Alaska transient	-;N	587 (N/A, 587, 2012)	5.87	1
Killer whale	<i>Orcinus orca</i>	West Coast Transient	-;N	243 (N/A, 243, 2009)	2.4	0
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Southeast Alaska	-; Y	975 (0.14, 872, 2012)	8.7	34
Dall's porpoise	<i>Phocoenoides dalli</i>	Alaska	-;N	83,400 (0.097, N/A, 1991)	Und	38
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
California sea lion	<i>Zalophus californianus</i>	U.S.	-;N	257,606 (N/A, 233,515, 2014)	14,011	197
Steller sea lion	<i>Eumetopias jubatus</i>	Western DPS	E/D; Y	54,267 (N/A; 54,267, 2017)	326	252
Steller sea lion	<i>Eumetopias jubatus</i>	Eastern DPS	T/D; Y	41,638 (N/A, 41,638, 2015)	2498	108
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina</i>	Lynn Canal	-; N	9,478 (N/A, 8,605, 2011)	155	50

1 - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

2- NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.

3 - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range.

All species that could potentially occur in the action areas are included in Table 2.

As described below, all eight species (with eleven managed stocks) temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have authorized it.

A detailed description of the of the species likely to be affected by the Statter Harbor project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the Federal Register notice for the proposed IHA (84 FR 55920; October 18, 2019); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that Federal Register notice for these descriptions. Please also refer to NMFS' website (<https://www.fisheries.noaa.gov/find-species>) for generalized species accounts.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all

marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans).

Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

Table 3 -- Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i>)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite (<i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> , 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Eight marine mammal species (five cetacean and three pinniped (two otariid and one phocid) species) have the reasonable potential to co-occur with the construction activities. Please refer to Table 2. Of the cetacean species that may be present, two are classified as low-frequency cetaceans (*i.e.*, all mysticete species), one is classified as mid-frequency cetaceans (killer whale), and two are classified as high-frequency cetaceans (harbor and Dall's porpoise).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from the City of Juneau's construction at Statter Harbor have the potential to result in behavioral harassment of marine mammals in the vicinity of the action area. The Federal Register notice for the proposed IHA (84 FR 55920; October 18, 2019) included a discussion of the effects of anthropogenic noise on marine mammals, therefore that information is not repeated here; please refer to the Federal Register notice (84 FR 55920; October 18, 2019) for that information.

The main impact associated with the Statter Harbor project will be temporarily elevated sound levels and the associated direct effects on marine mammals. The project will not result in permanent impacts to habitats used directly by marine mammals, such as haulout sites, but may have potential short-term impacts to food sources such as forage fish, and minor impacts to the immediate substrate during installation and removal of piles during the project. These potential effects are discussed in detail in the Federal Register notice for the proposed IHA (84 FR 55920; October 18, 2019), therefore that information is not repeated here; please refer to that Federal Register notice for that information.

Estimated Take

This section provides an estimate of the number of incidental takes authorized through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A

harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes will primarily be by Level B harassment, as use of the acoustic sources (*i.e.*, pile driving, removal, down the hole drilling) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for high frequency cetacean species and phocid pinnipeds because predicted auditory injury zones are larger than for mid-frequency species or otariid pinnipeds and they are known to frequent the harbor close to the docks where the construction will occur. Auditory injury is unlikely to occur for low or mid-frequency species. The mitigation and monitoring measures are expected to minimize the severity of such taking to the extent practicable.

As described previously, no mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more

detail and present the take estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals will be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 μ Pa (rms) for continuous (*e.g.*, vibratory pile-driving, drilling) and above 160 dB re 1 μ Pa (rms) for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources.

The City of Juneau's activity includes the use of continuous (vibratory pile driving/removal and down the hole drilling) and impulsive (impact pile driving) sources, and therefore the 120 and 160 dB re 1 μ Pa (rms) thresholds are applicable.

Level A harassment for non-explosive sources - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (NMFS 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). The City of Juneau's activity includes the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving/removal and down the hole drilling) sources.

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.

Table 4 -- Thresholds Identifying the Onset of Permanent Threshold Shift

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	<i>Cell 10</i> $L_{E,OW,24h}$: 219 dB

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa , and cumulative sound exposure level (L_E) has a reference value of 1 $\mu\text{Pa}^2\text{s}$. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.*, impact pile driving, vibratory pile driving and removal and down-the-hole drilling).

In order to calculate distances to the Level A and Level B harassment thresholds for piles of various sizes being used in this project, NMFS used acoustic monitoring data from other locations. Note that piles of differing sizes have different sound source levels. It is anticipated all of the piles will require drilling for rock sockets and will be installed at the rate of a single pile per day.

Vibratory removal - The closest known measurements of vibratory pile removal similar to this project are from the Kake Ferry Terminal project for vibratory extraction of an 18-inch steel pile. The extraction of 18-inch steel pipe piles using a vibratory

hammer resulted in underwater noise levels reaching 152.4 dBRMS at 55.8 feet (17 meters) (Denes *et al.*, 2016). The pile diameters for this project are smaller than those used in Denes *et al.*, thus the use of noise levels associated with the pile extraction at Kake are conservative.

Down the hole drilling - Little source level data are available for down-the-hole drilling. Denes *et al.* (2016) measured sound emanating from the drilling of 24-in (61-cm) piles at Kodiak and calculated a median SPL of 166.2 dB (at 10 m) which was used to calculate the PTS onset isopleths. Denes *et al.* (2016) also noted a transmission loss coefficient of 18.9 for drilling suggesting high attenuation when drilling below the seafloor. As the activity will not occur in the same location as the Denes *et al.* (2016) measurements, NMFS is using a transmission loss coefficient of 15 in this notice.

Vibratory driving - The closest known measurements of sound levels for vibratory pile installation of 16-inch (41-cm) steel piles are from the U.S. Navy Proxy Sound Source Study for projects in Puget Sound. Based on the projects analyzed it was determined that 16- to 24-inch (41- to 61-cm) piles exhibited similar sound source levels for projects in Puget Sound resulting in a recommended source level of 161 dB RMS at 33 feet (10 m) for piles diameters ranging from 16- to 24-inches (41- to 61-cm) (U.S. Navy 2015). However, as each pile that will be driven through vibratory driving will also utilize down the hole drilling, within the same day, the ensonified area for the down the hole drilling, which is larger and potentially a more conservative estimate, was used.

Impact driving - For impact pile driving of 16-inch (41-cm) piles, sound measurements were used from the literature review in Appendix H of the AKDOT&PF study (Yurk *et al.*, 2015) for 24-inch (61-cm) piles driven in the Columbia River with a

diesel impact hammer. To estimate the sound source levels of 16-inch (41-cm) piles data for the 24-inch (61-cm) piles were used as the available data for 16-inch piles did not report a peak level, thus these noise levels used in this notice are likely overestimating the acoustic isopleths. The impact driving source levels used were a SPL of 190dB RMS at 10 meters, 175 dB single strike SEL, and 205dB peak pressure.

When the NMFS Technical Guidance (2018) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources, such as the pile driving/removal and down the hole drilling, the NMFS User Spreadsheet predicts the distance at which, if a marine mammal remained at that distance the whole duration of the activity, it will incur PTS. Inputs used in the User Spreadsheet, and the resulting isopleths are reported below.

Table 5 -- NMFS User Spreadsheet Inputs

	Vibratory driving**	Vibratory removal	Down the hole drilling**		Impact driving
Spreadsheet Tab Used	A.1) Non-impulsive, continuous	A.1) Non-impulsive, continuous	A.1) Non-impulsive, continuous	Spreadsheet Tab Used	E.1) Impulsive, intermittent

Source Level (RMS SPL)	161	152.4	166.2	Source level (Single shot SEL)	175
Weighting Factor Adjustment (kHz)	2.5	2.5	2.5	Weighting Factor Adjustment (kHz)	2
Number of piles in 24 hours	2	3	3	Number of strikes per pile	250
Activity Duration (min) to drive 1 pile	360	30	240	Number of piles per day	2
Propagation (xLogR)	15	15	15	Propagation (xLogR)	15
Distance of source level measurement (meters)	10	17	10	Distance of source level measurement (meters)	10
Other factors if using different tab for other source				Source level (PK SPL)	205
				Distance of source level measurement (meters)	10

***Bold values indicate corrected typos from Proposed IHA.**

** **For our analysis, it is conservatively assumed drilling and vibratory pile driving will occur throughout the 12 hour work day**

Table 6 -- NMFS User Spreadsheet Outputs

PTS Isopleth (meters)					
Source Type	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
Vibratory driving	35.8	3.2	52.9	21.8	1.5
Vibratory removal	4.1	0.4	6.0	2.5	0.2
Down the hole drilling	79.5	7.0	117.6	48.3	3.4
Impact driving (SEL/PK)	184.2/ 1.2	6.6/ NA	219.5/ 15.8	98.6/ 1.4	7.2/ NA
Level B Behavioral Harassment Isopleth (m)					
Vibratory driving	5,411.7				
Vibratory removal	2,457.2				
Down the hole drilling	12,022.64				
Impact driving	1,000				

***Bold values indicate corrected typos from Proposed IHA.**

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Reliable densities are not available for Statter Harbor or the Auke Bay area. Generalized densities for the North Pacific are not applicable given the high variability in occurrence and density at specific inlets and harbors. Therefore, the applicant consulted opportunistic sightings data from oceanographic surveys in Auke Bay and sightings from Auke Bay Marine Station observation pier for Statter Harbor to arrive at a number of animals expected to occur within the harbor per day. For humpback whales, it is assumed that a maximum of four animals per day are likely to occur in the harbor. For Steller sea lions, the potential maximum daily occurrence of animals is 121 individuals within the harbor. For harbor seals, the maximum daily occurrence of animals is 52 individuals. For Dall's porpoises, it was assumed a large pod (20 individuals) might occur in the project area once per month in the spring months of March, April, and May. For harbor porpoises, it was assumed that up to one pair may enter the project area daily. For killer whales, it was conservatively assumed that up to one pod of resident killer whales (41 individuals) and one pod of transient killer whales (14 killer whales) might enter Auke Bay over the course of the project. It was assumed that one minke whale might enter the bay per month across the eight months when work could potentially be conducted. Take of California sea lions have been requested on a precautionary basis and it is assumed no more than one sea lion per day of in-water work will enter Auke Bay.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate. Because reliable densities are not available, the applicant requests take based on the above mentioned maximum number of animals that may occur in the harbor per day multiplied by the number of days of the activity. For

species occurring less frequently in the area, some take estimates were calculated based on potential monthly occurrence. The applicant varied these calculations based on certain factors.

Humpback whales - Because humpback whale individuals of different DPS (natal) origin are indistinguishable from one another (unless fluke patterns are linked to the individual in both feeding and breeding ground), the frequency of occurrence of animals by DPS is only estimated using the DPS ratio, based upon the assumption that the ratio is consistent throughout the Southeast Alaska region (Wade *et al.*, 2016). Work is expected to occur over 23 days and will involve a mixture of vibratory pile driving and drilling each day. Based on the available information and the extent of the Level B harassment zone it is estimated up to 4 humpback whales could be exposed to elevated noise during each day of pile driving and drilling. Using a daily potential maximum rate of four humpback whales per day, the project could take up to 92 humpback whales. Based on the allocation by DPS expected in the project area, it is assumed 6.1 percent of the humpbacks sighted will be from the ESA-listed Mexico DPS, or a potential 6 takes. No Level A harassment takes are requested for humpback whales as the Level A harassment zones are small and shutdown measures can be implemented prior to any humpback whales enter Level A harassment zones.

Steller sea lions - Using a potential daily maximum rate, the project could take up to 121 Steller sea lions each day of pile driving activities due to the large Level B harassment zones. The maximum daily count of 121 was used to make this determination as Steller sea lions have been observed in large herds within vicinity of the harbor in excess of seven days when prey is abundant and the Level B harassment zones are large

and in relatively close proximity to Benjamin Island (~22 km from project site). Thus, during these times it is likely that the rate of taking will be higher as the animals will be counted more than once if they dive and/or leave and re-enter the monitoring zone. On other days when dense groups are not present, fewer takes will be encountered, and it is assumed the overall take levels will even out. While there are a small number of resident harbor seals, it is anticipated there will be larger numbers of Steller sea lion takes, due to the large herds they have been observed in, the large size of the Level B harassment zones (up to 12.1 km) and the relative proximity to an established haulout at Benjamin Island. While the Level B harassment zones for the first phase of construction were generally smaller, much of the larger zones in this second phase are truncated due to land masses. Further, take numbers are estimated based on the largest group observed rafting in the Auke Bay vicinity and thus is considered an appropriate estimate for this phase as well.

Assuming 121 Steller sea lion takes per day, the total requested number of Steller sea lion takes for 23 days of work is 2,783 Steller sea lions. Based on the recently published literature ascribing sighted Steller sea lions in the zone of mixing to an allocated DPS, it is assumed 18 percent of the total takes, or 501 individuals, will be from the ESA-listed Western DPS. No Level A harassment takes are requested for Steller sea lions as the Level A harassment zones are small and shutdown measures can be implemented prior to Steller sea lions entering any Level A harassment zone.

Harbor seals - Up to 52 individual seals have been photographed simultaneously hauled out on the nearby dock at Fishermen's Bend (Ridgway unpubl. data). Direct effects of construction noise in this area will be partially blocked by the recently

constructed Phase II boat launch and parking area. We assume that the majority of animals that haul out on the nearby floats at Fishermen's Bend are likely to go under water and resurface throughout the duration of the project. The action area also extends into Stephens Passage near the location of a known harbor seal haulout near Horse Island. Abundance estimates within this area are 276.5 harbor seals (NOAA 2018). However, only a small portion of this survey unit is located within the project area and thus it is estimated that 25 percent (70 harbor seals) may also be located within the action area each day. With both areas combined it is estimated up to 122 harbor seals (52 + 70) may be exposed to elevated sound levels during each day of drilling, resulting in a total of 2,806 harbor seal takes by Level B harassment during the activity.

Due to the number of harbor seals commonly within the Level A harassment zones for impact pile driving and drilling, there is a chance the injury zone will not be free of harbor seals for sufficient time to allow for impact driving as harbor seals frequently use the nearby habitat. It is assumed that no more than 12 seals are likely to be found within the inner harbor, which will be used as the maximum of harbor seals that may be taken by Level A harassment for each day of the project. This results in a total estimate of 253 Level A harassment takes of harbor seals.

Dall's porpoise - Dall's porpoises have been observed to have strong seasonal patterns with the highest number being observed in the spring and the fewest in the fall (Dahlheim *et al.*, 2009). Group size in Alaska typically ranging from 10 to 20 individuals (Wells 2008). Should Dall's porpoise be present within the project area it is most likely to be during the spring months based on the strong seasonal patterns observed. The project is located in habitat that it not typical for Dall's porpoise, however they may still be

present during the spring months of March, April and May. It is assumed that a large pod of 20 Dall's porpoises (Wells 2008) may enter the harassment zones once each of these months, resulting in a take estimate of 60 Level B harassment takes of Dall's porpoise.

Dall's porpoises can generally be observed by monitors due to the "rooster tail" splash often made when surfacing (Wells 2008). However, due to the size of the Level A harassment zone associated with drilling (120 meters) and impact driving (220 meters), and due to the possibility for night work, it is possible Dall's porpoises may enter and remain in the Level A harassment zone undetected. It is conservatively assumed that one group of four Dall's porpoises may enter the Level A harassment zone and remain undetected every fourth day of pile driving, resulting in a take estimate of 24 Level A takes of Dall's porpoise across during the activity.

Harbor porpoise - There is little data regarding harbor porpoise presence in the project area, however they have been observed in the project vicinity during several surveys of nearby waterways including Lynn Canal and Stephens Passage (Dahlheim *et al.*, 2009; Dahlheim *et al.*, 2015). The average group size ranged from 1.24 to 1.57 throughout the study years, consistent with our estimate that one pair per day may be present in the Auke Bay Area. Based on the available information is estimated that up to one pair of harbor porpoises may be taken by Level B harassment during each of the 23 days of pile driving, resulting in a total estimated 46 takes by Level B harassment.

Harbor porpoises are stealthy, having no visible blow and a low profile in the water making the species difficult for monitors to detect (Dahlheim *et al.*, 2015). The Level A harassment zones extend up to 220 meters, because of this distance it is possible harbor porpoises may enter the Level A harassment zone undetected. It is conservatively

assumed that one pair of harbor porpoises may enter the Level A harassment zone every other day of pile driving, resulting in a total estimated take of 24 harbor porpoises by Level A harassment.

Killer whale - From 2010-2017 an average of 25 killer whale sightings were recorded in the project area per year (Ridgeway unpubl. data 2017). Data did not make distinctions between the stocks and thus the ratio between stocks is unknown. However, a resident pod identified as the AG pod is known to frequent the Juneau area (Dahlheim *et al.*, 2009; personal observation) and has 41 members recorded in the North Gulf Oceanic Society's Identification Guide (NGOS 2019). This pod is seen in the area intermittently in groups of up to approximately 25 individuals (personal observation), consistent with the data for the area. Transient killer whales have been observed in nearby waterways as well and one group of 14 individuals were observed during surveys (Dahlheim *et al.*, 2009). Killer whales move fast and have large ranges, and while they may occasionally enter the Level B harassment zones they are unlikely to linger in the area. Based on the information available it is conservatively estimated that one pod of residents (41 individuals) and one pod of transients (14 individuals) may be taken during the duration of the project. As killer whales may not be able to be readily distinguished between resident and transients, or the applicable stock populations, a total of 55 takes of killer whales are requested. Based on the intermittent occurrence of killer whales from various stocks, if killer whales appear in Auke Bay during construction activities, it will be difficult to estimate what proportion of observed killer whales will be from each potential stock. Therefore, for the purposes of this analysis, we assume the total amount of estimated take of killer whales could be entirely from each of the three stocks in the area

and have made our findings assuming the total amount of authorized take could be entirely from each of the three stocks. No Level A takes are requested for killer whales due to the small size of the Level A harassment zones and the conspicuous nature of killer whales that should allow for effective implementation of shutdowns before killer whales could incur PTS.

Minke whale - There are no known occurrences of minke whales within the action area, however since their ranges extend into the project area and they have been observed in southeast Alaska (Dahlheim *et al.*, 2009) it is possible the species could occur near the project area given the large harassment zones associated with drilling. Therefore, one take is being requested per month of the potential project window (October 2020 through May 2021) for a total of 8 estimated takes of minke whale by Level B harassment. Due to the unlikely occurrence of minke whales in the general area and the additional unlikely of a minke whale occurring within 200 meters of the construction activity, no Level A takes of minke whales is authorized.

California sea lion - California sea lions are not typically found in the project area, however one hauled out on Statter Harbor boat launch ramp float in September of 2017. For take purposes it is estimated that one California sea lion may be present each day of in-water work, resulting in a total of 23 estimated takes by Level B harassment. Due to the rarity of California sea lions in the area, no Level A harassment take is authorized.

The total number of takes authorized are summarized in Table 7 below.

Table 7 -- Takes Authorized by Level A and Level B Harassment

	Total Level B Harassment Takes	Total Level A Harassment Takes	Total Takes Authorized
Humpback whale*	92	0	92

Steller sea lion eDPS	2,282	0	2,282
Steller sea lion wDPS	501	0	501
Harbor seal	2,806	276	3,082
Dall's porpoise	60	24	84
Harbor porpoise	46	24	70
Killer whale Alaska Resident Northern Resident Gulf of Alaska Transient West Coast Transient	55	0	55
Minke whale	8	0	8
California sea lion	23	0	23

* For ESA section 7 consultation purposes, 6.1 percent are designated to the Mexico DPS and the remaining are designated to the Hawaii DPS; therefore, we assigned 6 Level B takes to the Mexico DPS.

Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) the manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) the practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

In addition to the measures described later in this section, the City of Juneau will employ the following standard mitigation measures:

- Conduct briefings between construction supervisors and crews and the marine mammal monitoring team prior to the start of all pile driving activity, and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures;
- For in-water heavy machinery work other than pile driving (*e.g.*, standard barges, *etc.*), if a marine mammal comes within 10 m, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions;

- Work may not begin during nighttime hours, or during periods of low visibility when visual monitoring of marine mammals can be conducted. However, work can continue into the nighttime hours if necessary;
- For those marine mammals for which Level B harassment has not been authorized, in-water pile installation/removal and drilling will shut down immediately if such species are observed within or on a path towards the monitoring zone (*i.e.*, Level B harassment zone); and
- If take reaches the authorized limit for an authorized species, pile installation will be stopped as these species approach the Level B harassment zone to avoid additional take.

The following measures will apply to the City of Juneau's mitigation requirements:

Establishment of Shutdown Zone for Level A Harassment - For all pile driving/removal and drilling activities, the City of Juneau will establish a shutdown zone, as described in Table 8 below. The purpose of a shutdown zone is generally to define an area within which shutdown of activity will occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). The placement of Protected Species Observers (PSOs) during all pile driving and drilling activities (described in detail in the Monitoring and Reporting Section) will ensure marine mammals in the shutdown zones are visible.

Table 8 -- Monitoring and Shutdown Zones for Each Project Activity

	Shutdown Zones (m)					Monitoring Zones (m)
Source	Low Frequency	Mid-frequency	High Frequency	Phocid	Otariid	All species

	Cetacean	Cetacean	Ceteacean			
Vibratory Removal	20	10	25	10	10	2,500
Vibratory Installation/ Drilling	80	10	120	50	10	2,500
Impact Driving	185	10	220	25	10	1,000

Establishment of Monitoring Zones for Level B Harassment – The City of Juneau will establish monitoring zones to correlate when possible with Level B harassment zones which are areas where SPLs are equal to or exceed the 160 dB rms threshold for impact driving and the 120 dB rms threshold during vibratory driving and drilling. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project area outside the shutdown zone and thus prepare for a potential cease of activity should the animal enter the shutdown zone. The monitoring zones are described in Table 8 above. If visibility is such that observers are able to make observations beyond the monitoring zone distance, these observations will be recorded and reported. The Level B harassment zone for vibratory pile installation and down the hole drilling is so large that a smaller and more feasible zone will be implemented as monitoring zones. Given that the PSOs cannot observe the entireties of the various Level B harassment zones, Level B harassment takes will be recorded and extrapolated based upon the number of takes observed and the percentage of the Level B harassment zone that was not visible.

Soft Start - The use of soft-start procedures are believed to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced energy, with each strike followed by a 30-second waiting period. This procedure will be conducted a total of three times before impact pile driving begins. Soft start will be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of thirty minutes or longer. Soft start is not required during vibratory pile driving and removal activities.

Pre-Activity Monitoring - Prior to the start of daily in-water construction activity, or whenever a break in pile driving/removal or drilling of 30 minutes or longer occurs, PSOs will observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone will be cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zone, a soft-start cannot proceed until the animal has left the zone or has not been observed for 15 minutes. If the monitoring zone has been observed for 30 minutes and non-permitted species are not present within the zone, soft start procedures can commence and work can continue even if visibility becomes impaired within the monitoring zone. When a marine mammal permitted for Level B harassment take is present in the monitoring zone, activities may begin and Level B harassment take will be recorded. If work ceases for more than 30 minutes, the pre-activity monitoring of both the monitoring zone and shutdown zone will commence.

Due to the depth of the water column and strong currents present at the project site, bubble curtains will not be implemented as they will not be effective in this environment. The City will not be limited to daytime operations as the contractor cannot simply leave the equipment overnight due to safety concerns and the large tidal swings. As such they will either have to leave the equipment manned all night or fully remove it from the pile, assuming the pile is embedded enough to be safely left. Construction needs to be completed during the winter as it is a very active harbor and cannot feasibly be worked on during the summer. Construction during the winter also coincides with the time that most humpback whales are not present in Alaska, minimizing potential impacts.

Based on our evaluation of the applicant's measures, NMFS has determined that the mitigation measures provide the means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors.
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks.
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).
- Mitigation and monitoring effectiveness.

Marine Mammal Visual Monitoring

Monitoring shall be conducted by NMFS-approved PSOs per the Marine Mammal Monitoring Plan provided in Appendix B of the City of Juneau's application. Trained observers shall be placed from the best vantage points practicable to monitor for marine mammals and implement shutdown or delay procedures when applicable through

communication with the equipment operator. Observer training must be provided prior to project start, and shall include instruction on species identification (sufficient to distinguish the species in the project area), description and categorization of observed behaviors and interpretation of behaviors that may be construed as being reactions to the specified activity, proper completion of data forms, and other basic components of biological monitoring, including tracking of observed animals or groups of animals such that repeat sound exposures may be attributed to individuals (to the extent possible).

Monitoring will be conducted 30 minutes before, during, and 30 minutes after pile driving/removal and drilling activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving/removal and drilling activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

A minimum of two PSOs will be based strategically with one PSO on land at the Statter Harbor project site and the other on land or potentially on a vessel partway into Auke Bay. These stations will allow full monitoring of the impact hammer monitoring zone and the Level A shutdown zones. Potential locations for the second observer are described on pages 5 and 6 in Appendix B of the City of Juneau's application.

PSOs will scan the waters using binoculars, and/or spotting scopes, and will use a handheld GPS or range-finder device to verify the distance to each sighting from the project site. All PSOs will be trained in marine mammal identification and behaviors and are required to have no other project-related tasks while conducting monitoring. In

addition, monitoring will be conducted by qualified observers, who will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. The City of Juneau will adhere to the following observer qualifications:

- (i) Independent observers (*i.e.*, not construction personnel) are required;
- (ii) At least one observer must have prior experience working as an observer;
- (iii) Other observers may substitute education (degree in biological science or related field) or training for experience; and
- (iv) The City of Juneau shall submit observer CVs for approval by NMFS.

Additional standard observer qualifications include:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

The City of Juneau will submit a marine mammal monitoring report. A draft marine mammal monitoring report will be submitted to NMFS within 90 days after the completion of pile driving and removal and drilling activities. It will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report must include:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (*e.g.*, percent cover, visibility);
- Water conditions (*e.g.*, sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Locations of all marine mammal observations; and
- Other human activity in the area.

If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury, serious injury or mortality, the City of Juneau will immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinator. The report will include the following information:

- Description of the incident;
- Environmental conditions (*e.g.*, Beaufort sea state, visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities may not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with the City of Juneau to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The City of Juneau will not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that the City of Juneau discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition as described in the next paragraph), City of Juneau will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the

NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator. The report will include the same information identified in the paragraph above. Activities will be able to continue while NMFS reviews the circumstances of the incident. NMFS will work with City of Juneau to determine whether modifications in the activities are appropriate.

In the event that City of Juneau discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), City of Juneau will report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator, within 24 hours of the discovery. City of Juneau will provide photographs, video footage (if available), or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the

likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

Pile driving/removal and drilling activities associated with the Statter Harbor construction project as outlined previously, have the potential to disturb or displace marine mammals in Auke Bay. Specifically, the specified activities may result in take, in the form of Level A harassment and Level B harassment from underwater sounds generated from pile driving and removal and down-the-hole drilling. Potential takes could occur if individuals of these species are present in the ensonified zone when these activities are underway.

The takes from Level A and Level B harassment will be due to potential behavioral disturbance, TTS, and PTS (for select species). No mortality is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. Level A harassment is only anticipated for Dall's porpoise, harbor porpoise, and harbor seal. The potential for harassment is minimized through the construction method and the implementation of the planned mitigation measures (see Mitigation section).

As described previously, killer whales, minke whales, and California sea lions are considered rare in the project area and we authorize only nominal and precautionary take of these species. Therefore, we do not expect meaningful impacts to these species and find that the total killer whale, minke whale, and California sea lion take from each of the specified activities will have a negligible impact on this species.

For remaining species, we discuss the likely effects of the specified activities in greater detail. Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff, 2006; Lerma, 2014; ABR, 2016). Most likely, individuals will move away from the sound source and be temporarily displaced from the areas of pile driving and drilling, although even this reaction has been observed primarily only in association with impact pile driving. The pile driving activities analyzed here are similar to, or less impactful than, numerous other construction activities conducted in southeast Alaska, which have taken place with no known long-term adverse consequences from behavioral harassment. Level B harassment will be reduced to the level of least practicable adverse impact through use of mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to avoid the area while the activity is occurring. While vibratory driving and drilling associated with the planned project may produce sound at distances of many kilometers from the project site, thus intruding on some habitat, the project site itself is located in a busy harbor and the majority of sound fields

produced by the specified activities are close to the harbor. Therefore, we expect that animals annoyed by project sound will avoid the area and use more-preferred habitats.

In addition to the expected effects resulting from authorized Level B harassment, we anticipate that harbor porpoises, Dall's porpoises, and harbor seals may sustain some limited Level A harassment in the form of auditory injury. However, animals in these locations that experience PTS will likely only receive slight PTS, *i.e.*, minor degradation of hearing capabilities within regions of hearing that align most completely with the energy produced by pile driving. If hearing impairment occurs, it is most likely that the affected animal will lose only a small number of decibels in its hearing sensitivity, which in most cases is not likely to meaningfully affect its ability to forage and communicate with conspecifics. As described above, we expect that marine mammals will be likely to move away from a sound source that represents an aversive stimulus, especially at levels that will be expected to result in PTS, given sufficient notice through use of soft start.

The project also is not expected to have significant adverse effects on affected marine mammals' habitat. The project activities will not modify existing marine mammal habitat for a significant amount of time. The activities may cause some fish to leave the area of disturbance, thus temporarily impacting marine mammals' foraging opportunities in a limited portion of the foraging range; but, because of the short duration of the activities and the relatively small area of the habitat that may be affected, the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized;
- The Level A harassment exposures are anticipated to result only in slight PTS, within the lower frequencies associated with pile driving;
- The anticipated incidents of Level B harassment are likely to consist of temporary modifications in behavior that are not anticipated to result in fitness impacts to individuals;
- The specified activity and ensonification area is very small relative to the overall habitat ranges of all species; and
- The presumed efficacy of the mitigation measures in reducing the effects of the specified activity to the level of least practicable adverse impact.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken

to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Table 7 demonstrates the number of animals that could be exposed to received noise levels that could cause Level A harassment and Level B harassment for the planned activities in the Statter Harbor project area. Our analysis shows that less than one third of the population abundance of each affected stock could be taken by harassment. The numbers of animals anticipated to be taken for these stocks will be considered small relative to the relevant stock's abundances even if each estimated taking occurred to a new individual – an extremely unlikely scenario.

Calculated takes do not assume multiple harassments of the same individual(s), resulting in larger estimates of take as a percentage of stock abundance than are likely given resident individuals. This is the case with the resident harbor seals (Lynn Canal/Stephens Passage stock) as it is documented that the same small group of individuals frequent the Statter Harbor area.

As reported, a small number of harbor seals, most of which reside in Statter Harbor year-round, will be exposed to construction activities for 23 days. The total population estimate in the Lynn Canal/Stephens Passage stock is 9,478 animals over 1.37 million acres (5,500 km²) of area in their range. The great majority of these exposures will be to the same animals given their residency patterns, however the number of repeat exposures is difficult to quantify due to the lack of visible markings on harbor seals in water. No more than 121 harbor seals have ever been sighted in the project area and the

harbor seals are known to be resident. Therefore, it is unlikely that the harbor seals entering the area on each of the 23 days of construction activity are unique individuals and are rather repeated takes of the same small number of individuals.

Based on the analysis contained herein of the activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an “unmitigable adverse impact” on the subsistence uses of the affected marine mammal species or stocks by Alaskan Natives. NMFS has defined “unmitigable adverse impact” in 50 CFR 216.103 as an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

The project is not known to occur in an important subsistence hunting area. Auke Bay is a developed area with regular marine vessel traffic. Of the marine mammals considered in this IHA application, only harbor seals are known to be used for subsistence in the project area. In a previous consultation with ADF&G, the Douglas Indian Association, Sealaska Heritage Institute, and the Central Council of the Tlingit and

Haida Indian Tribes of Alaska on other construction activities in Statter Harbor, representatives indicated that the primary concern with construction activities in Statter Harbor was impacts to herring fisheries, not marine mammals. As stated above, impacts to fish from the project are expected to be localized and temporary, so are not likely to impact herring fisheries. If any tribes express concerns regarding project impacts to subsistence hunting of marine mammals, further communication between will take place, including provision of any project information, and clarification of any mitigation and minimization measures that may reduce potential impacts to marine mammals. Therefore, NMFS has determined that the total taking of affected species or stocks will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with the Alaska Region Office of Protected Resources, whenever we propose to authorize take for endangered or threatened species.

The effects of this Federal action were adequately analyzed in NMFS' 2019 Biological Opinion on the City and Borough of Juneau Docks and Harbors Department Statter Harbor Improvements Project, Juneau, Alaska, which concluded that the take NMFS authorized through this IHA will not jeopardize the continued existence of any

endangered or threatened species or destroy or adversely modify any designated critical habitat.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our action (*i.e.*, the issuance of an incidental harassment authorization) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (incidental harassment authorizations with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that will preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

Authorization

NMFS has issued an IHA to the City of Juneau for the potential harassment of

small numbers of eight marine mammal species incidental to the Statter Harbor project in Auke Bay, Alaska, provided the previously mentioned mitigation, monitoring and reporting requirements are incorporated.

Dated: January 21, 2020.

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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